# Existing Roadway and Highway Conditions

## Background

Quantifying current traffic conditions in the planning area presents some special challenges. Extensive roadway construction has been underway continuously since the last update to the *Long Range Transportation Plan (LRTP)* in 2001. In particular, the widening of I-40 has had major impacts:

- The diversion of traffic off of I-40 onto other routes temporarily alters their traffic volumes, their levels-of-service, and even their capacities. The significance of this impact varies, and cannot be easily determined, but it is often substantial.

- The closure of certain interchanges, individual ramps, and overpasses changes traffic patterns, not only on the road directly affected by the construction, but on intersecting and parallel routes as well.

- Even upon completion of a project, it can take considerable time for drivers to adjust to the new facility, and for traffic patterns to stabilize.

A quick inspection of interstate traffic counts from 1999 through 2002 confirms the problems described above. Traffic volumes increase from 1999 to 2000, remain relatively unchanged in 2001, and drop significantly in 2002. The 2002 volumes generally fall between 1999 and 2000 levels, although at several locations the Average Daily Traffic (ADT) is lower in 2002 than in 1999.

Work on the Greensboro Urban Loop also has caused major disruptions in traffic flow, as cross streets are reconstructed, rerouted, or closed (either permanently or temporarily). Numerous other projects also have been under construction during the same period; while the duration and magnitude of the impacts of each of these was much smaller than for I-40 or the Urban Loop, when taken together they further exacerbate the situation.

Given the extent of all these projects, both in terms of the area involved and the volume of traffic affected, system-level analysis of actual traffic conditions during the past two years is of limited use in updating the Greensboro Urban Area 2030 Transportation Plan. Furthermore, the recent economic recession has resulted in a relatively low rate of overall growth in population, employment, and traffic over the last two years. Therefore, for the purposes of

this study, the analysis conducted for the 2001 plan update (using mainly 1999 and 2000 data) is probably more relevant than an analysis relying on data from 2001-2003. In either case, the most critical problem areas are still identified, even if the associated numbers may not be identical.

It should be noted that upon completion of this round of major project construction, traffic volumes can be expected to climb significantly, as drivers adjust to increased capacities and reduced travel times. This shifting of travel routes to take advantage of increased convenience (sometimes referred to as *latent demand*, or *induced travel*) will undoubtedly reveal new deficiencies. Traffic bottlenecks may become evident in places that currently function adequately.

*Urban Loop under construction*

## Major Facilities

### National Highway System

Interstate 40 and Interstate 85 are the most important highways in the planning area and the Piedmont Triad Region. These routes serve commuters, shoppers, truckers, vacationers, and others on trips within, into, out of, and through the planning area.

The merging of Interstate 40 and Interstate 85 between Greensboro and Hillsborough carries daily traffic volumes approaching 145,000 in "The Valley." These are among the highest traffic volumes anywhere along Interstate 40, and are the second highest in North Carolina, behind only Interstate 77 in Charlotte.

East of Greensboro, Interstate 40/85 is eight lanes wide. At the western end of the planning area, Interstate 40 extends toward southern Winston-Salem. The segment of Interstate 40 between Holden Road and the Business I-40 split, just west of Sandy Ridge Road, has been widened to an 8- to 10-lane section. This multi-year widening project (combined with the elimination, construction, and modification of interchanges to accommodate the Greensboro Urban Loop) is the genesis of most of the discussion in the previous section of this report.

Interstate 85 southwest of Greensboro is a six-lane freeway into the High Point/Thomasville area. Interstate 85 narrows to four lanes south of Thomasville. Further south, it provides access to Charlotte and Atlanta. Variable message signs, video surveillance, and motorist assistance patrols have been set up to help manage congestion on both interstates.

Although US 220 and NC 68 do not currently meet interstate standards, portions of these facilities are anticipated to comprise

the backbone of the future Interstate 73 corridor. US 220 is the main north-south axis for travel between Martinsville, VA and Asheboro, although the connection through the planning area is neither direct nor convenient. To the south, US 220 is a four-lane freeway; to the north, cross-sections vary from two-lane to four-lane divided.

NC 68 provides an alternate corridor farther west, offering better access to the Piedmont Triad International Airport (PTIA) area and High Point, although portions of the two-lane alignment to the north are less than ideal. Other portions are four-lane divided/freeway. A recently completed partnership project of the NCDOT and the City of Greensboro improved roadway alignment and intersection operations between West Market Street and Gallimore Dairy Road. The programmed US 220/NC 68 Connector project will partly shift the major north-south route to the NC 68 corridor. The planned development of a Federal Express transfer hub and third runway at PTIA will have a significant impact on this facility (among others), requiring additional improvements. The Airport Area Transportation Study (AATS) examined the need for and feasibility of 20 different alternatives for future connections to PTIA in western Guilford County. The draft final version of this study includes a preferred alternative and recommendations for further study.

US 29, identified as a Congressional High Priority Corridor, is the principal arterial connection to the northeast. This four-lane freeway is an important route for commodities movement, connecting Greensboro to Reidsville, Danville, VA and Lynchburg, VA. The segment between I-40 and Summit Avenue falls well short of modern design standards with respect to several key elements, including interchange design and shoulder and median width. Substantial development (or re-development) is anticipated in the vicinity of Eckerson Road, Cone Boulevard, and other portions of northeast Guilford County. Combined with the impacts of the Urban Loop and its interchange with US 29, this facility faces dramatic changes in both the amount and type of traffic it serves. Several studies have already been initiated to address the issues just described.

The most important facility to the southeast is US 421, a multi-lane highway connecting to Sanford. To the west of Greensboro, US 421 follows the route of Business I-40 through Winston-Salem. Access management and the impacts of the Urban Loop are key issues for both these segments of US 421.

## Other Regionally Significant Facilities

High Point Road has traditionally been the primary link from Greensboro to High Point and Jamestown. High Point Road is

critical for reaching major activity centers such as Four Seasons Mall, the Greensboro Coliseum Complex, and Guilford Technical Community College. Since capacity increases through widening are prohibitively expensive and disruptive, Advanced Traffic Management Systems (ATMS) including reversible lanes, variable message signs, and video surveillance have been installed along High Point Road between Interstate 40 and Lee Street. While this system is used primarily for Coliseum events, more general application is envisioned.

Wendover Avenue is a critical multiple-function facility. Throughout Greensboro, the roadway ranges from four to seven lanes, some portions divided with full access control, and functions as both a radial and circumferential route. Segments of Wendover Avenue are designated as US 70 and US 220. Roadway and intersection improvements were completed recently on portions of Wendover Avenue between Bridford Parkway and Edwardia Drive.

To the east, US 70, which follows East Wendover Avenue and Burlington Road, is the main alternate to Interstate 40 for travel to Burlington. Widening and realignment has been completed in the vicinity of the interchange with the eastern Urban Loop. West of Greensboro, the newly widened western leg, ranging from four to seven lanes, primarily divided with some access control, forms a high-growth commercial and residential corridor between Greensboro and High Point.

Bryan Boulevard serves as a major connection between downtown Greensboro and the PTIA/NC 68 area. Bryan Boulevard is a four-lane freeway connecting two facilities with partial access control, Airport Parkway and Benjamin Parkway. This facility is currently being realigned to accommodate the third runway at PTIA and to reconfigure airport area access.

## Major Local Facilities

Vehicular travel in Greensboro is aided by a strong network of radial arterials, serving traditional patterns of travel between outlying areas and downtown. While not as comprehensive, a circumferential system has developed to meet the growing demand for cross-town (or suburb-to-suburb) travel. Elements of this system can be conveniently organized with respect to the geographic area served.

Holden Road, for example, acts as an inner loop for western Greensboro. When combined with Cone Boulevard to the north, it provides near-continuous circumferential mobility from Randleman Road to US 29.

To the north, Lawndale Drive, North Elm Street, Church Street, Yanceyville Road, and Summit Avenue provide access to residential and commercial development between US 220 and US 29 south of Lakes Brandt, Townsend, and Jeanette. Cross-sections vary from two-lane to five-lane. The main cross-town facilities in this area (other than Wendover Avenue) are Cone Boulevard (four-lane divided) and Pisgah Church/Lees Chapel Road (five-lane/four-lane).

Aside from Bryan Boulevard and West Market Street, Friendly Avenue is the primary radial facility in western Greensboro, roughly defined as the area between Battleground Avenue, Interstate 40, and the Piedmont Triad International Airport. It is primarily a five-lane facility, carrying up to 40,000 vehicles per day. The section between Holden and Westridge Roads has experienced substantial traffic growth in the past two years, and near-term improvements are programmed. A number of intersecting roads combine to form a circumferential system. Holden Avenue is the innermost, followed by Westridge and Muirs Chapel Roads, and finally Guilford College/New Garden Road. These are all two-lane to five-lane roads.

Wendover Avenue, Aycock Street/Westover Terrace, Florida Street, and US 29 form a perimeter around central Greensboro and two major universities, the University of North Carolina, Greensboro and North Carolina Agricultural & Technical University. Downtown, several one-way streets provide efficient access: Greene and Davie Streets are the main north-south components, while Friendly and Market form the east-west axis.

In combination, Spring/Edgeworth, Fisher/Smith, Murrow Boulevard, and Lee Street serve as a circumferential route within the Greensboro central business district. Spring Garden Street is UNC-G's main street, while East Market Street is NCA&T's. Spring Garden Street was recently improved with a special emphasis on pedestrian, bicycle, and transit considerations. Similar improvements are underway on East Market Street. Lee Street to the east and Patterson Street to the west offer the most direct route for accessing downtown Greensboro from either Interstate 40 from the west or Interstate 40/85 from the east.

Southwest Greensboro is beginning to converge with northeast High Point. West Wendover Avenue, High Point Road, and Guilford College Road, create parallel corridors spanning the high-growth area between both cities. They provide both access to developing land and mobility for through traffic. Guilford College Road was recently realigned and grade-separated to accommodate access to the Urban Loop and Wendover Avenue. The combination of Piedmont Parkway/Hilltop Road/Groometown Road creates the only major route perpendicular to these corridors. The continuity of this cross-town route suffers from

differences in cross-section, with Piedmont Parkway being four-lane divided, Groometown Road two-lane to five-lane, and Hilltop Road mostly two-lane. Planned improvements to Hilltop Road and Groometown Road will give this corridor a continuous minimum four-lane cross-section. Holden Road and Vandalia Road are the other significant local facilities in this area.

Many important facilities fan out across the southern Greensboro area. To the west, both US 220 and Randleman Road feed Freeman Mill Road, which has been widened and improved to a primarily four-lane divided cross-section. On the east, US 421, Pleasant Garden Road, Liberty Road, and Alamance Church Road all converge into Martin Luther King, Jr. Boulevard for access to downtown. Elm-Eugene Street and MLK Jr. Boulevard both have interchanges at Interstate 40/85. The most important local cross-town facilities in this area are Florida Street and Vandalia Road.

Main radial arterials in east Greensboro include East Market Street/Huffine Mill Road, Lee Street, and US 70. Cross-sections on these facilities vary from two lanes to a five-lane divided section. US 29 is the only major cross-town route.

Results of the analysis of existing capacity deficiencies are summarized graphically in **Map 2.1**. This figure depicts the location and severity of congestion on existing Thoroughfare Plan roadways. The Congestion Index used here reflects a somewhat subjective weighting of results from the CMS, PTRTDM, and field observation. In general, the following guidelines are followed in identifying and classifying congestion:

- **Over Capacity** – On these facilities, traffic volumes exceed capacity by at least 20% (volume-to-capacity ratio > 1.2), calculated either on a daily basis or during one or more peak periods. Severe and persistent congestion occurs on a regular basis. This condition typically corresponds with a level of service of F.

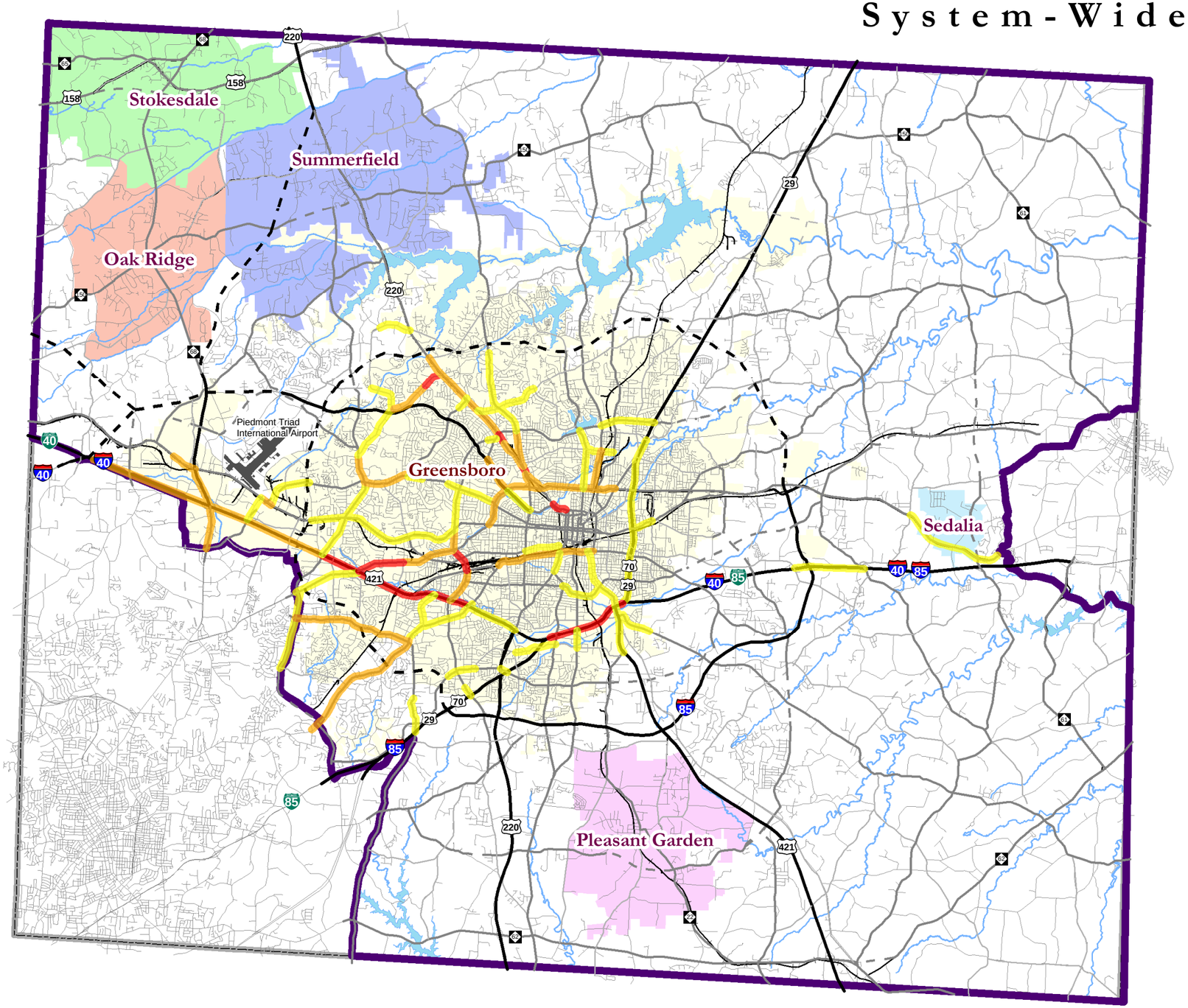
- **At Capacity** – The volume-to-capacity (V/C) ratios on these facilities range from 1.0 to 1.2. Moderate congestion exists for extended periods, and frequently becomes more severe, although not necessarily on a regular basis. This condition typically corresponds with a level of service of E, or possibly F.

- **Approaching Capacity** – Although traffic volumes on these facilities do not exceed their maximum (or ultimate) capacity, they are within 20% of this threshold (V/C ratios between 0.8 and 1.0). Under these conditions, there is enough intermittent congestion to cause some delays. With little reserve capacity available, minor incidents can trigger more significant delays. LOS in this category is typically D, but can range from C to E.

Upon completion of the above-referenced construction, the major deficiencies identified in the 2001 *Existing Conditions* report (related to I-40 and I-85) should be significantly improved. Deficiencies in other congested corridors (Wendover Avenue, US 220, High Point Road, Hilltop Road, New Garden Road, Friendly Avenue, etc. ) should be at least partially addressed through currently programmed projects. Deficiencies at other locations (Holden Road, NC 68, US 29) not currently addressed by specific, committed projects may experience some relief upon completion of these committed projects; other deficiencies, however, may appear.

Greensboro Urban Area Long-Range Transportation Plan

# System-Wide V/C Deficiency Map
## Map 2.1




*Inset: Greensboro CBD*


## Legend

**Current Thoroughfare Plan Projects**

- Existing Freeway
- Existing Major
- Existing Minor
- Proposed Freeway
- Proposed Major
- Proposed Minor
- Metropolitan Area Boundary

**2002 Congestion Index**

- Approaching Capacity
- At Capacity
- Over Capacity

0 0.5 1 2 3 4 5 Miles

N
W E
S

*August 26, 2004*

Mapping prepared by Kimley-Horn and Associates, Inc.
for the Greensboro Urban Area Long-Range Transportation Plan
**Data Sources:** Guilford County, the City of
Greensboro, FEMA, the U.S. Census Bureau, KHA,
and NCDOT

## System Level Performance Measures

The most meaningful system performance measures are described below, as is the functional classification system used to stratify the results.

Vehicle-Miles of Travel (VMT) is a measure of the total distance traveled by all vehicles on a road network. It is sensitive to both the number of vehicle-trips and the distance traveled per trip. VMT is calculated by multiplying the traffic volume on each link in the road network by the length of that link, and summing these products. VMT is a key input for estimating fuel consumption and tailpipe emissions, and is useful for comparing the performance of transportation alternatives.

Vehicle-Hours Traveled (VHT) is an aggregate measure of the amount of time vehicles spend traveling on a road network. As with VMT, both the number of trips and trip length influence VHT, but travel speed is also a factor. Increased congestion can raise VHT, even if average trip length does not grow. Conversely, if speeds increase, VHT can go down even as trip lengths increase. VHT is a useful indicator of the relative efficiency of alternative transportation systems. It can also be used to help estimate fuel consumption and air pollution.

Lane-Miles is the number of through-lanes on each segment of roadway times its length, summed across the entire network. It is a simple measure of the overall potential capacity of the highway system.

Average Speed is a somewhat abstract and relative measure, derived by dividing a network's VMT by its VHT. The resulting speed is not usually considered a realistic or typical speed in absolute terms, but can be useful in comparing the rate and efficiency of travel between alternative scenarios.

Volume-to-Capacity (V/C) Ratios are used to express the quality of traffic service on a facility or system. A low ratio corresponds with a high level of service (LOS A or B), indicating relatively free-flowing traffic. A high V/C ratio (1. 0 or higher) means conditions are congested (LOS E or F). Capacity, as it is used here, is defined as the maximum, or ultimate (LOS E) capacity. V/C ranges are often used to define different levels of congestion. Four such ranges are used in this study:

| **Ratio** | **Capacity** | ***Level of Service*** | **Congestion** |
|---|---|---|---|
| V/C < 0.8 | Below capacity | **A**, **B**, or **C** | Little or no congestion |
| 0.8 ≤ V/C < 1.0 | Approaching capacity | C, **D** or E | Some intermittent congestion |
| 1.0 ≤ V/C < 1.2 | At capacity | **E** or F | Moderate, consistent congestion |
| V/C ≥ 1.2 | Over capacity | **F** | Severe and persistent congestion |

**Figures 2.1 and 2.2** summarize VMT by functional class, both in absolute and percentage terms. **Figures 2.3 and 2.4** provide similar depictions of VHT. **Figure 2.5** depicts average speed by functional class. **Tables 2.1 and 2.2** provide all this information, plus lane-mileage, in numerical format. A quick inspection of these exhibits reveals several valuable observations.

- Interstates carry a very large portion of the total VMT, but represent the second smallest share of the network's lane-miles.
- Non-interstate freeways have the highest average speeds of any category.
- Other principal arterials represent a relatively small share of VMT, VHT, and lane-miles.
- Minor arterials represent the largest shares of both VMT and VHT, and are the largest category in terms of lane-miles.
- Local streets include the second largest share of lane-miles, but have the lowest speeds, and contribute a relatively small percentage to total VMT. Note that these statistics are only for local roads included in the model. Because they are not capacity constrained and carry such small volumes, most local roads are not in the model.

**Figures 2.6, 2.7, 2.8, and 2.9** focus on the quality of traffic service and levels of congestion, as expressed by the V/C ranges discussed earlier. These figures present VMT totals by V/C range, system-wide and by functional class, both in absolute terms and as percentages of the total. **Tables 2.3, 2.5, 2.7, and 2.9** present this same information in different tabular formats. These tables are organized and broken down in various ways to emphasize different findings. **Tables 2.4, 2.6, 2.8, and 2.10** provide comparable breakdowns of V/C characteristics in terms of lane-miles, rather than VMT. Basic observations derived from these exhibits include the following:

- Over 1/3 of the miles traveled in the study area experience some congestion. Seven percent occur under severely congested conditions. However, less than 20% of lane-miles are considered congested, with just over 3% being severely congested. This suggests that most congestion is concentrated on high-volume facilities.
- In fact, about 1/2 of interstate VMT experiences some congestion (not considering construction related delays). On other principal arterials, 2/3 of the VMT experiences some congestion, and 22% occurs under severe congestion, by far the highest proportions of any functional category.

- In absolute, system-wide terms, most severe congestion (V/C > 1.2) is associated with minor arterials. Minor arterials represent 38.7% of the VMT and 40.8% of the lane-miles (38 lane-miles) experiencing severe congestion.

- For V/C greater than 0.8 (at least some congestion), minor arterials represent 32.2% of the VMT, and 39.6% of the lane-mileage (207 lane-miles). The corresponding figures for interstates are 35.1% of VMT, and 21.8% of lane-mileage (114 lane miles). Given that interstates are at least four lanes and most minor arterials are two lanes, this translates to about 94 miles of congested minor arterials, and 28 miles of congested interstate.

- Non-interstate freeways and local streets experience very little congestion.

**Figure 2.1** — 2002 VMT by Functional Class

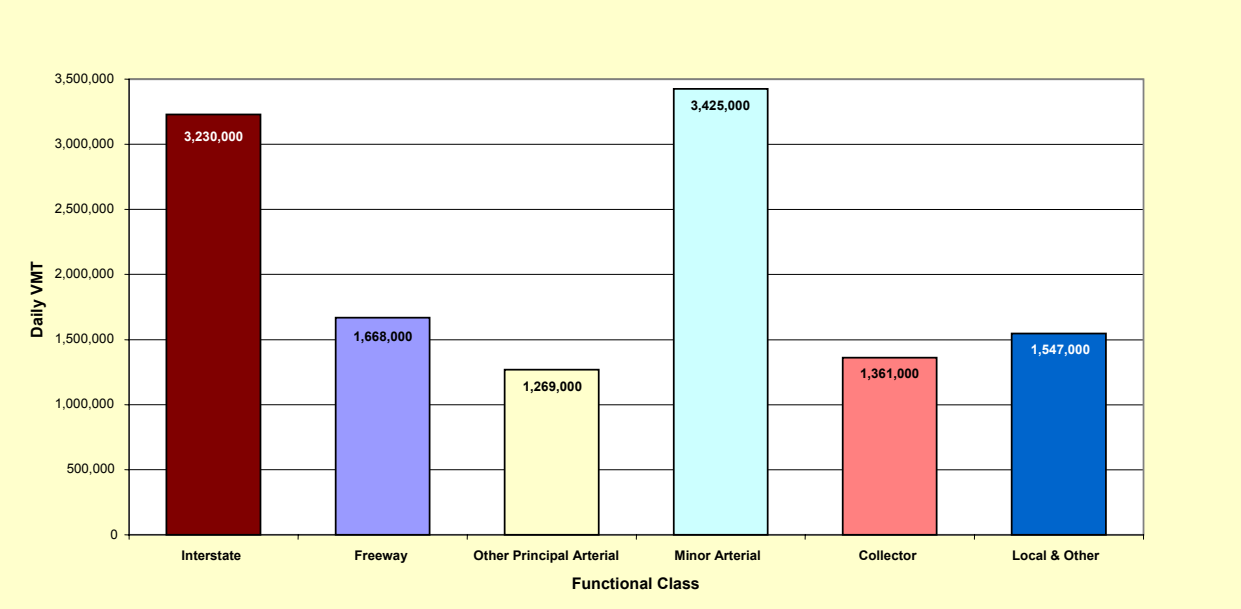


**Figure 2.2** — 2002 VMT Share by Functional Class

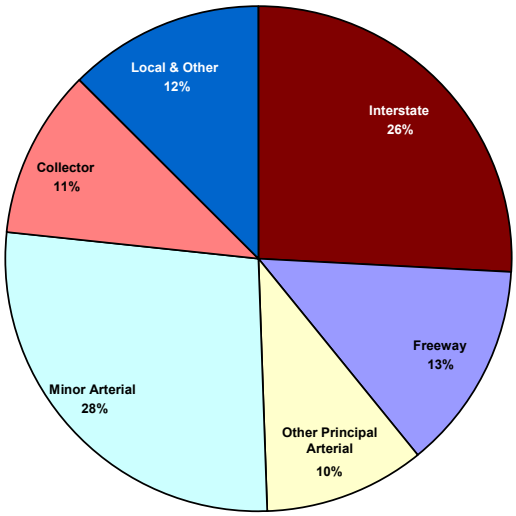



**Figure 2.3** — 2002 VHT by Functional Class

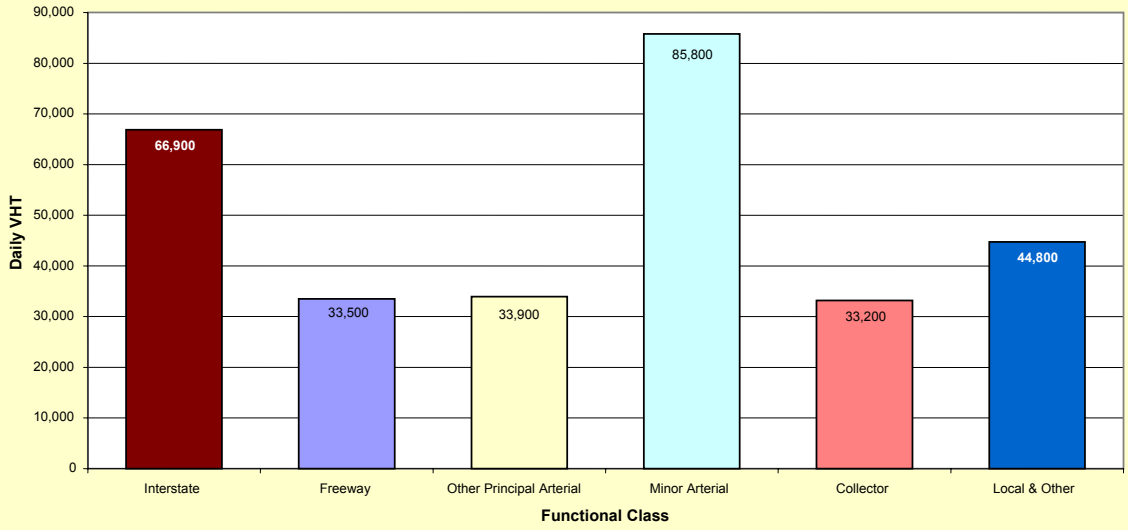


**Figure 2.4** — 2002 VHT Share by Functional Class

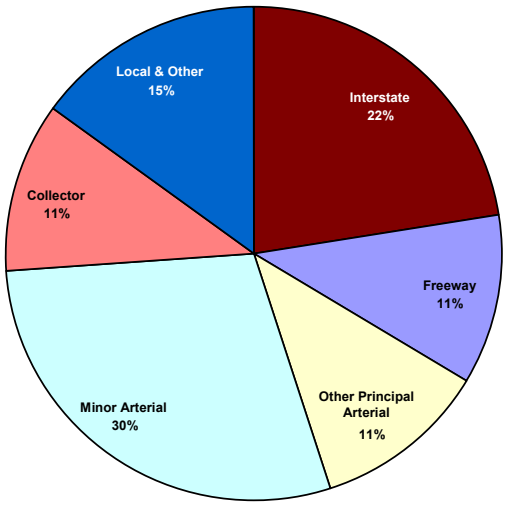



**Figure 2.5** — 2000 "Average Speed" by Functional Class
(Average = 42 mph)

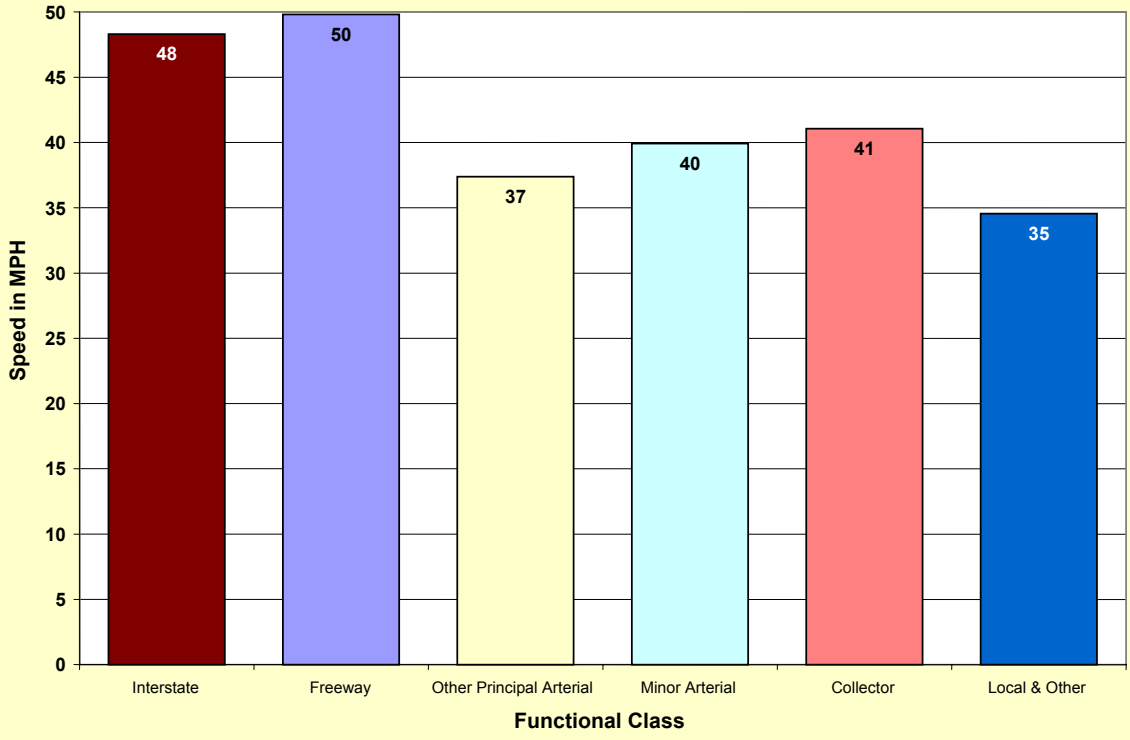


**Table 2.1** — 2002 Travel and Network Absolute Characteristics, by Functional Class

| Functional Class | VMT | VHT | Average Speed | Lane-Miles |
|---|---|---|---|---|
| Interstate | 3,230,000 | 66,900 | 48.3 | 280 |
| Freeway | 1,668,000 | 33,500 | 49.8 | 280 |
| Other Principal Arterial | 1,269,000 | 33,900 | 37.4 | 208 |
| Minor Arterial | 3,425,000 | 85,800 | 39.9 | 829 |
| Collector | 1,361,000 | 33,200 | 41 1 | 511 |
| Local & Other | 1,547,000 | 44,800 | 34.5 | 516 |
| **TOTAL** | **12,500,000** | **298,000** | **41.9** | **2,624** |

**Table 2.2** — 2002 Travel and Network Relative Characteristics, by Functional Class

| Functional Class | VMT | VHT | Lane-Miles |
|---|---|---|---|
| Interstate | 25.8% | 22.4% | 10.7% |
| Freeway | 13.3% | 11.2% | 10.7% |
| Other Principal Arterial | 10.2% | 11.4% | 7.9% |
| Minor Arterial | 27.4% | 28.8% | 31.6% |
| Collector | 10.9% | 11.1% | 19.5% |
| Local & Other | 12.4% | 15.0% | 19.7% |
| **TOTAL** | **100.0%** | **100.0%** | **100.0%** |

**Figure 2.6** — 2002 VMT Share by Volume/Capacity Ratio

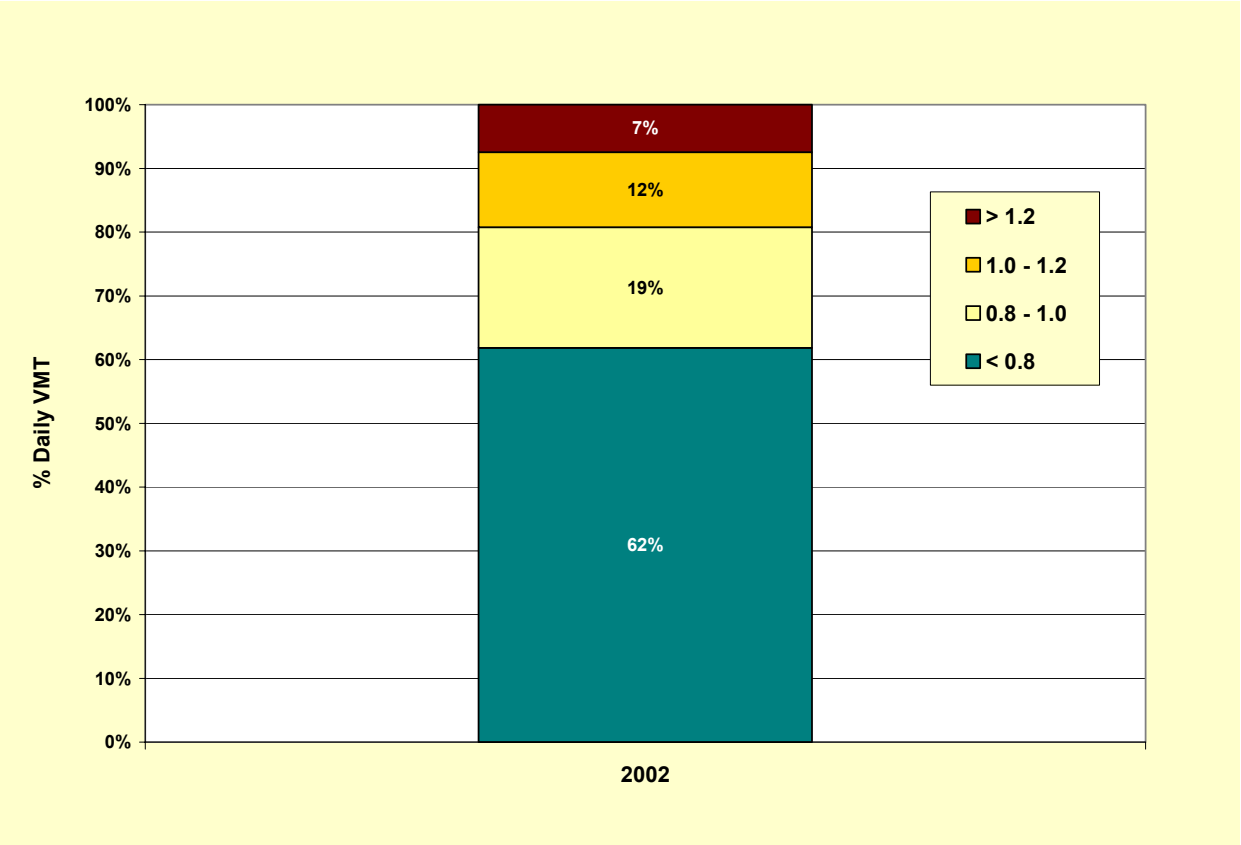



**Figure 2.7** — 2002 VMT by V/C Ratio by Functional Class

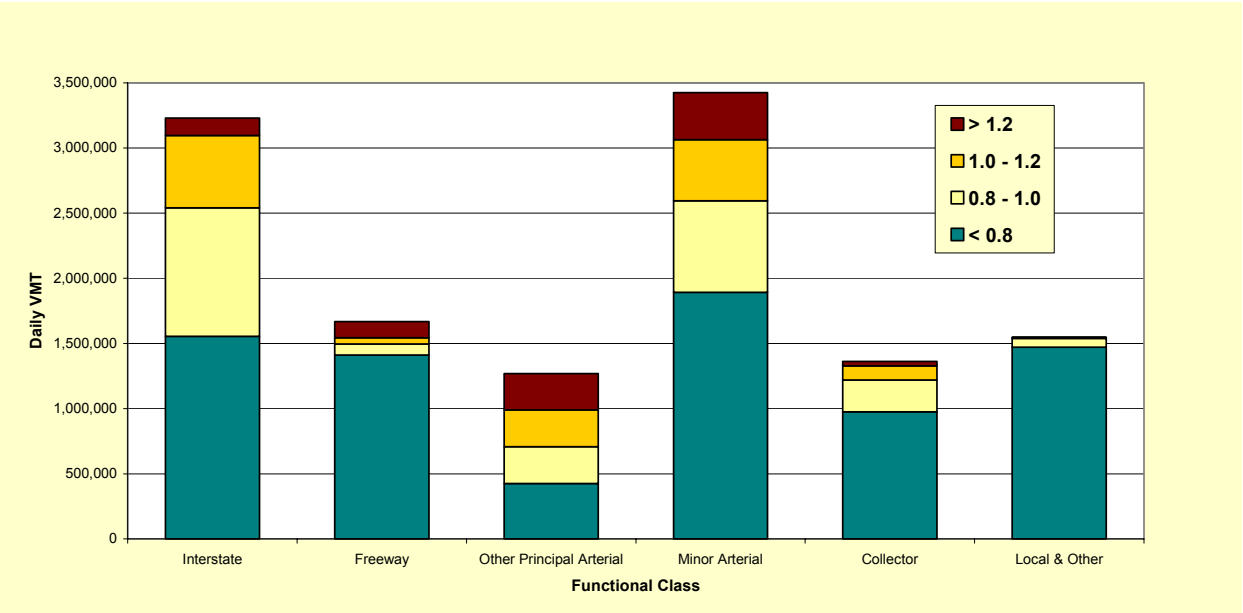


**Figure 2.8** — 2002 Congested VMT by Functional Class

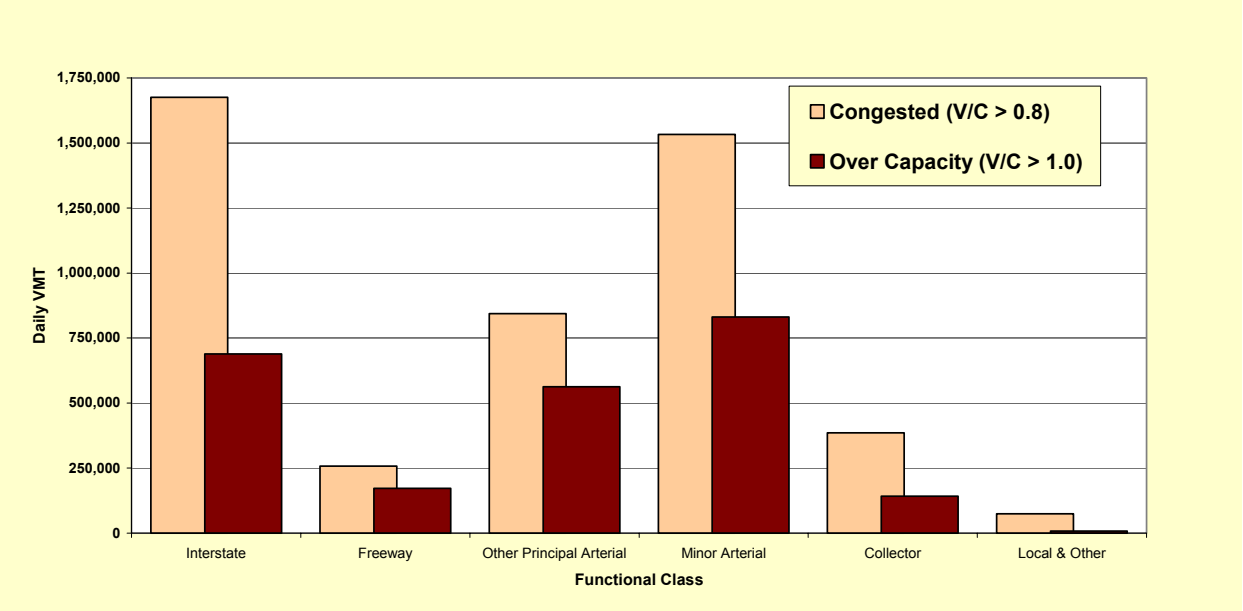



**Figure 2.9** — 2002 Percent Congested VMT by Functional Class

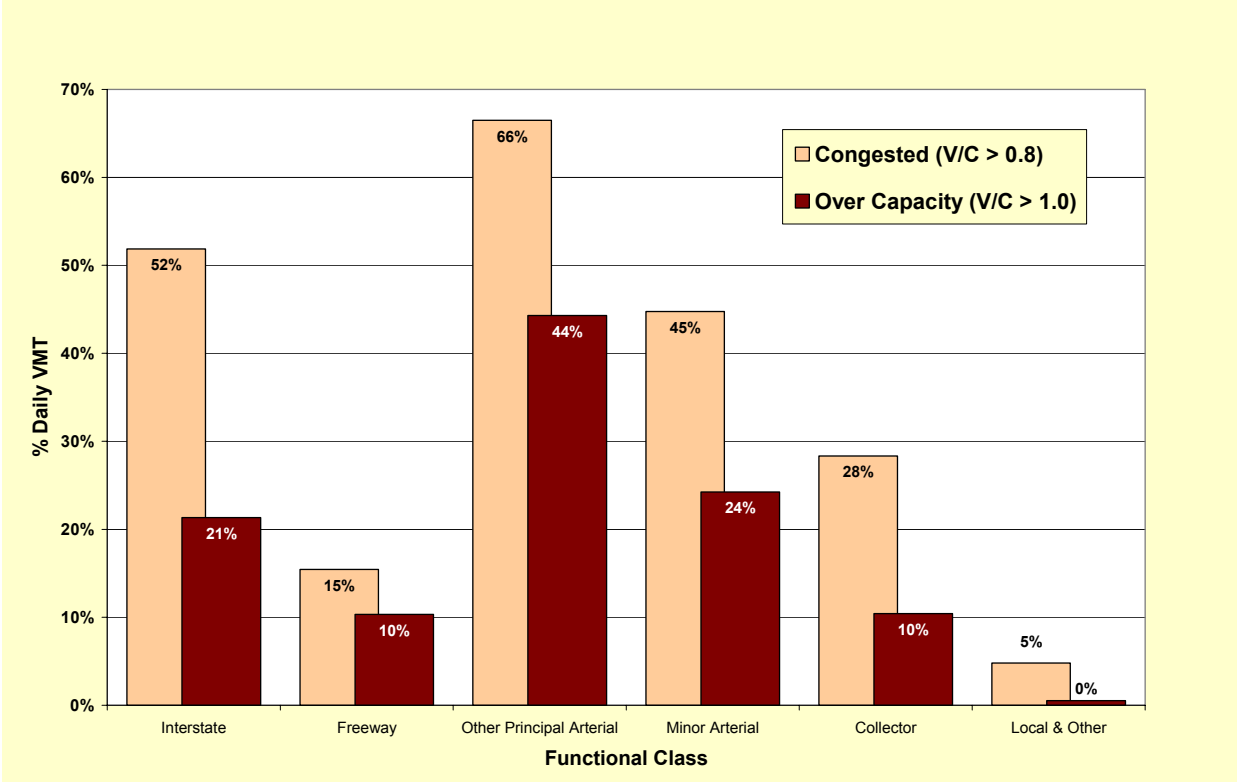


**Table 2.3** — 2002 Vehicle Miles Traveled by V/C Ratio

| | V/C Ratio | | | |
|---|---|---|---|---|
| **Functional Class** | **< 0.8** | **0.8 - 1.0** | **1.0 - 1.2** | **> 1.2** |
| Interstate | 1,555,000 | 986,000 | 555,000 | 134,000 |
| Freeway | 1,411,000 | 85,000 | 47,000 | 125,000 |
| Other Principal Arterial | 425,000 | 281,000 | 283,000 | 279,000 |
| Minor Arterial | 1,893,000 | 702,000 | 470,000 | 367,000 |
| Collector | 976,000 | 244,000 | 109,000 | 33,000 |
| Local & Other | 1,472,000 | 66,000 | 7,000 | 2,000 |
| **TOTAL** | **7,732,000** | **2,365,000** | **1,471,000** | **933,000** |

**Table 2.4** — 2002 Lane-Miles by V/C Ratio

| | V/C Ratio | | | |
|---|---|---|---|---|
| **Functional Class** | **< 0.8** | **0.8 - 1.0** | **1.0 - 1.2** | **> 1.2** |
| Interstate | 166 | 74 | 32 | 8 |
| Freeway | 252 | 8 | 6 | 14 |
| Other Principal Arterial | 101 | 41 | 36 | 29 |
| Minor Arterial | 623 | 106 | 63 | 38 |
| Collector | 454 | 39 | 14 | 3 |
| Local & Other | 509 | 6 | 1 | 0 |
| **TOTAL** | **2,106** | **274** | **151** | **93** |

**Table 2.5** — 2002 Vehicle Miles Traveled Breakdown by Functional Class

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 |
|---|---|---|---|---|
| Interstate | 20.1% | 41.7% | 37.7% | 14.4% |
| Freeway | 18.2% | 3.6% | 3.2% | 13.4% |
| Other Principal Arterial | 5.5% | 11.9% | 19.2% | 29.9% |
| Minor Arterial | 24.5% | 29.7% | 32.0% | 38.7% |
| Collector | 12.6% | 10.3% | 7.4% | 3.5% |
| Local & Other | 19.0% | 2.8% | 0.5% | 0.2% |
| **TOTAL** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

**Table 2.6** — 2002 Lane-Mile Breakdown by Functional Class

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 |
|---|---|---|---|---|
| Interstate | 7.9% | 27.1% | 21.2% | 9.2% |
| Freeway | 12.0% | 3.0% | 3.7% | 14.8% |
| Other Principal Arterial | 4.8% | 15.0% | 23.8% | 31.6% |
| Minor Arterial | 29.6% | 38.5% | 41.5% | 40.8% |
| Collector | 21.6% | 14.4% | 9.3% | 3.5% |
| Local & Other | 24.2% | 2.1% | 0.5% | 0.2% |
| **TOTAL** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

**Table 2.7** — 2002 Vehicle Miles Traveled Breakdown by V/C Ratio

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 | TOTAL |
|---|---|---|---|---|---|
| Interstate | 48.1% | 30.5% | 17.2% | 4.2% | 100.0% |
| Freeway | 84.6% | 5.1% | 2.8% | 7.5% | 100.0% |
| Other Principal Arterial | 33.5% | 22.2% | 22.3% | 22.0% | 100.0% |
| Minor Arterial | 55.3% | 20.5% | 13.7% | 10.5% | 100.0% |
| Collector | 71.7% | 17.9% | 8.0% | 2.4% | 100.0% |
| Local & Other | 95.2% | 4.3% | 0.4% | 0.1% | 100.0% |

**Table 2.8** — 2002 Lane-Mile Breakdown by V/C Ratio

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 | TOTAL |
|---|---|---|---|---|---|
| Interstate | 59.1% | 26.5% | 11.4% | 3.0% | 100.0% |
| Freeway | 90.2% | 2.9% | 2.0% | 4.9% | 100.0% |
| Other Principal Arterial | 48.8% | 19.8% | 17.2% | 14.1% | 100.0% |
| Minor Arterial | 75.2% | 12.7% | 7.6% | 4.6% | 100.0% |
| Collector | 88.9% | 7.7% | 2.8% | 0.6% | 100.0% |
| Local & Other | 98.7% | 1.1% | 0.2% | 0.0% | 100.0% |

**Table 2.9** — 2002 Percentage of All Vehicle Miles Traveled by V/C Ratio & Functional Class

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 | TOTAL |
|---|---|---|---|---|---|
| Interstate | 12.4% | 7.9% | 4.4% | 1.1% | 25.8% |
| Freeway | 11.3% | 0.7% | 0.4% | 1.0% | 13.3% |
| Other Principal Arterial | 3.4% | 2.3% | 2.3% | 2.2% | 10.2% |
| Minor Arterial | 15.1% | 5.6% | 3.8% | 2.9% | 27.4% |
| Collector | 7.8% | 2.0% | 0.9% | 0.3% | 10.9% |
| Local & Other | 11.8% | 0.5% | 0.1% | 0.0% | 12.4% |
| **TOTAL** | **61.9%** | **18.9%** | **11.8%** | **7.5%** | **100.0%** |

**Table 2.10** — 2002 Percentage of All Lane-Miles by V/C Ratio and Functional Class

| Functional Class | < 0.8 | 0.8 - 1.0 | 1.0 - 1.2 | > 1.2 | TOTAL |
|---|---|---|---|---|---|
| Interstate | 6.3% | 2.8% | 1.2% | 0.3% | 10.7% |
| Freeway | 9.6% | 0.3% | 0.2% | 0.5% | 10.7% |
| Other Principal Arterial | 3.9% | 1.6% | 1.4% | 1.1% | 7.9% |
| Minor Arterial | 23.7% | 4.0% | 2.4% | 1.4% | 31.6% |
| Collector | 17.3% | 1.5% | 0.5% | 0.1% | 19.5% |
| Local & Other | 19.4% | 0.2% | 0.0% | 0.0% | 19.7% |
| **TOTAL** | **80.3%** | **10.5%** | **5.7%** | **3.5%** | **100.0%** |

## Traffic Safety

The traffic safety program for the urban area includes cooperation between NCDOT and the City of Greensboro Department of Transportation. The NCDOT Division 7 Traffic Engineer manages a spot safety program which seeks to alleviate hazardous traffic conditions through targeted improvements. In addition, the Safety Evaluation Section of NCDOT conducts engineering evaluations of completed safety projects and programs to determine their effectiveness in reducing the frequency and severity of motor vehicle crashes, the improvement in mobility, and to provide engineering tools to better understand the effects of safety projects and programs.

While NCDOT remains focused on state maintained sections of roadways, the City of Greensboro Department of Transportation conducts an annual traffic safety program for streets within the City limits. The following information includes excerpts from their 2003 Traffic Safety Program Report. The purpose of the program is to identify locations within the City limits that experience unusual accident activity, which includes accident patterns that occur on a frequent basis or accidents that result in serious or fatal injuries.

This program considers the following in determining hazardous locations: Severity Index, Equivalent Property Damage Only Rate, Fatal Crash Analysis, and Request for Service. The Request for Service program involves reports from citizens that report potential traffic hazards. Each request is investigated and evaluated for possible improvements.

The 2003 Traffic Safety Program utilized the Traffic Engineering Accident Analysis System (TEAAS), which is maintained by the North Carolina Department of Motor Vehicles (NCDMV). The criteria for this query included intersections with a minimum of 5 accidents within 100 feet of the intersection for the period June 1, 2001 to May 31, 2002. Twenty-five intersections were selected for the Severity Index list.

The Equivalent Property Damage Only Rate (EPDOR) is calculated using the Accident Rate (AR) and the Severity Index (SI) for each intersection. The Accident Rate (AR) is based on the number of accidents per million vehicles entering the intersection. The EPDOR is used because the frequency of accidents, accident rate, number and severity of injuries, and the volume of traffic are all considered. Twenty-five intersections were selected for the EPDOR list. Several intersections that made the EPDOR list also made the SI list.

The combination of the Severity Index and Equivalent Property Damage Only Rate resulted in a list 41 intersections that were in included in the 2003 Traffic Safety Program. **Table 2.11** depicts these projects as well as proposed improvements intended to enhance safety.

**Table 2.11** — Greensboro Safety Program Improvements List

| | Intersection/Location | Recommended Improvements |
|---|---|---|
| | **Completed Improvement Projects** | |
| * | High Point Road & Pinecroft Road | Mast arm installation/signal reconfiguration project (2004)<br>Re-stripe stop bar for northbound Pinecroft Road (Spring 2004) |
| * | Colby Street/Oakwood Drive & High Point Road | Re-stripe crosswalk and stop bar for Oakwood Drive (Spring 2004) |
| * | Battleground Avenue & Cotswold Terrace | Install northbound Battleground Avenue left turn phase (2004) |
| * | Benjamin Parkway & N. Elam Avenue | Signal modification for northbound Benjamin Parkway (change from lag to lead) (Spring 2004) |
| ** | Park Avenue & Sullivan Street | Install 'Stop Ahead' sign for southbound park Avenue (Winter 2003)<br>Change flasher operation to 'Wig-Wag' (Winter 2003)<br>Re-Stripe stop bar for southbound Park Avenue (Spring 2004) |
| ** | Apache Street & S. English Street | Install 'Stop Ahead" sign for Apache Street (Winter 2003)<br>Re-stripe stop bar for Apache Street (Spring 2004) |
| ** | Frazier Road & Groometown Road | Investigate signalization (Winter 2003)<br>Replace existing chevrons with oversize chevrons (Winter 2003) |
| | Phillips Avenue | Install crosswalks, pedestrian refuge islands, crosswalk signs with continuous flasher, and reduce speed limit (Spring 2004) |
| | S. Eugene Street & W. Sycamore Street | Install 'in-street' pedestrian signs and rumble strips (Winter 2003) |
| | W. Market Street & Commerce Place | Install 'in-street' pedestrian signs and rumble strips (Spring 2004) |
| | Hobbs Road (1400 Block) | Installed 'chevron' signs (Winter 2003) |
| | Center Street (Hunter Elementary School) | School Zone Flasher (Winter 2003) |
| | Martin Luther King Jr. Drive (Gillespie Elementary School) | School Zone Flasher (Winter 2003) |
| | Elm Street & Fisher Avenue | Install 'in-street' pedestrian signs (Winter 2003) |
| | Elam Avenue between W. Friendly Avenue & Benjamin Parkway | Install pedestrian refuge islands/mid-block crosswalk (Winter 2003) |
| | W. Friendly Avenue & College Road/New Garden Road | Installation of signs indicating "Turning Traffic Must Yield to Pedestrians" (Fall 2003) |
| | Center Street & Larson Street | Installation of pedestrian crosswalk (Fall 2003) |
| | Virginia Street & W. Wendover Avenue | Install intersection warning signs with continuous flasher (Winter 2003) |
| | Fourth Street & Summit Avenue | Signal installation (Winter 2003) |
| | Lawndale Drive & New Garden Road | Removal of sight obstruction (Winter 2003) |
| | Wendover Avenue (I-40 to Meadowood Street) | Median installation (Winter 2003) |

| | Intersection/Location | Recommended Improvements |
|---|---|---|
| | Walker Avenue | Install multi-way stops, pedestrian crosswalks, and rumble strips (Spring 2004) |
| | **Improvement Projects Planned or Under Way** | |
| * | W. Friendly Avenue & Green Valley Road | Install "Left Turn Yield on (Green Ball)" sign for eastbound W. Friendly Avenue |
| * | English Street & E. Market Street | Install "Left Turn Yield on (Green Ball)" sign for northbound English Street and eastbound E. Market Street |
| * | Chimney Rock Road & W. Friendly Avenue | Re-stripe stop bars on Chimney Rock Road (Spring 2004) |
| * | Randleman Road & South Street/Orchard Street | Investigate installation of flasher for northbound Randleman Road at South Street (Spring 2004) |
| * | High Point Road & Vanstory | Install back plates on High Point Road Signals (Spring 2004) |
| * | Battleground Avenue & Brassfield Road | Intersection Improvement Project<br>Re-stripe for all approaches (Spring 2004) |
| * | Lindsay Street & Murrow Boulevard | Offset left turn lanes for Murrow Boulevard (Prepare Functional-Winter 2003) |
| * | Cone Boulevard & N. Elm Street | Re-stripe stop bars for Cone Boulevard |
| * | Battleground Avenue & Battleground Court/Mill Street | Install northbound Battleground Avenue left turn phase (2004) |
| * | E. Friendly Avenue & N. Murrow Boulevard | Signal reconfiguration with the Market Street streetscape project |
| * | Battleground Avenue & W. Cone Boulevard/Benjamin Parkway | Intersection Improvement Project |
| ** | E. Bessemer Avenue & E. Lindsay Street | Re-stripe stop bars and crosswalks (Spring 2004) |
| ** | W. Florida Street & McCormick Street | Install stop bars on McCormick Street (Spring 2004) |
| ** | Sullivan Street & Summit Avenue | Check left turn warrants for southbound Summit Avenue (Winter 2003) |
| ** | Creek Ridge Road & Randleman Road | Re-Stripe stop bar for eastbound Creek Ridge Road (Spring 2004) |
| | Lees Chapel Road & Southern Webbing Mill Road | Actuated Flasher Installation (Fall 2003) |
| | Pisgah Church Road & Ransom Road | Installation of pedestrian crosswalk (Fall 2003) |
| | Huffine Mill Road & Esquire Court | Removal of sight obstruction (Winter 2003) |
| | Elm Street & Willoughby Boulevard | Installation of 'curve warning' sign (Winter 2003) |
| | Lee Street & Tate Street | Installation of 'No U-Turn' sign (Summer 2003) |

* - Intersection Identified by Severity Index
** - Intersection Identified by EPDOR